



Spaceport News

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John F. Kennedy Space Center

Crawler and launch platform shake, rattle and roll

The first in a series of engineering data gathering tests was performed last week at KSC involving the Space Shuttle's crawler transporter and the Mobile Launcher Platform (MLP).

The crawler transporter moved the MLP, carrying a set of twin solid rocket boosters, slowly out of the Vehicle Assembly Building in support of engineering analysis vibration tests on the crawler and MLP. The crawler moved along at various speeds up to 1 mph in an effort to gather vibration data as it left the VAB.

The purpose of these rollout tests is to gather data that will be used to develop future maintenance requirements on the transport equipment and the flight hardware. Various parts of the MLP and crawler transporter have been instrumented with vibration data collection equipment.

Additional rollout tests will be performed in the upcoming months without the booster set.



AS THE CRAWLER TRANSPORTER slowly moves the Mobile Launcher Platform (MLP) out of the Vehicle Assembly Building, the two solid rocket boosters on top are framed in the doorway. The move is in support of engineering analysis vibration tests on the crawler and MLP.

New lab provides a gateway to space research

The Space Life Sciences Laboratory was dedicated Nov. 19 in a ceremony hosted by Kennedy Space Center and the state of Florida.

The 100,000 square-foot facility houses labs for NASA's ongoing research efforts, microbiology/microbial ecology studies and analytical chemistry labs. Facilities for spaceflight experiment and flight hardware development, new plant growth chambers and an Orbiter Environment Simulator that will be used to conduct ground control experiments in simulated flight conditions for Space Flight Experiments also call the new lab home.

"Today we celebrate the dedication of the new Space Life Sciences Lab and a new era in education and economic partnership," said Lt. Gov. Toni Jennings. "This new facility will greatly benefit Florida's university community."

"The SLS Lab provides NASA's gateway to space with operations and research capability to effectively use the International Space Station and take full advantage of research and commercialization



TONI JENNINGS (left), LIEUTENANT GOVERNOR of Florida, and Frank Brogan, president of Florida Atlantic University, receive a briefing from Dr. Robert J. Ferl (right), University of Florida, on the Space Life Sciences Lab.

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Jim Kennedy
Center Director

The Kennedy Update

Happy Thanksgiving everyone! I know you're reading this after the holiday, but with my leave in early November, I didn't get a chance to wish everyone a happy holiday. I hope you had a great time, and if you traveled, you and your family came home safe and sound.

Everyone is a critical member of the KSC team. Having everyone back safe and healthy doing vital work in our Space Program is "Step One" in performing our important work for America.

Congratulations to our International Space Station processing team on their five-year anniversary of placing elements in space! You'll see more about it in the news next week, but on Dec. 4, 1998, the Space Shuttle Endeavour carried the first U.S. element called "Unity" into orbit. This followed the earlier Nov. 20 launch of the Russian Zarya element.

I read recently that the ISS was named the Number One engineering feat in human history. We should all be proud as our team played a major role in this accomplishment. Humans have lived on the Station for more than three consecutive years and the research information we've gleaned from our ISS experience is helping rewrite the medical and science journals.

I know great work is taking place every day to prepare elements for future Space Shuttle flights. Once we begin flying again, completing the ISS construction will be the top priority for the Space Shuttle program.

Speaking of Space Shuttles, I thought I would update you on some important return-to-flight details for our Shuttle Program.

First, we are now working to process both Atlantis and Discovery to support the launch of STS-114 next September. This

gives the Program the maximum flexibility possible to meet the current September 2004 launch timeframe.

While Atlantis is still the primary vehicle, processing Discovery in parallel allows us to switch orbiters if an unforeseen problem arises with Atlantis.

This also allows us to have a second vehicle ready to fly within 86 days of the STS-114 launch. Eighty-six days is the time a crew could stay aboard the International Space Station if a Shuttle became disabled.

Currently, STS-114 is a planned 12-day mission with two extension days, if necessary.

Please remember that while we discuss these new details, we are milestone and NOT schedule driven. We fly the Shuttles when they are fit to fly.

"I'd like to personally wish you a happy holiday."

— Jim Kennedy

I know this is not an easy mission to accomplish, but I have 100 percent confidence that you are up to the task. It's great to see everyone in action helping to make our Shuttle program safer, stronger and better than ever before.

The annual Center Director Holiday Coffee will be held Dec. 11, from 8 a.m. – noon on each floor of the NASA Headquarters Building. Please come by, as I'd like to personally wish you a happy holiday and show off *your* KSC Headquarters.

I want to invite everyone to our end-of-year all hands meeting on Dec. 12, beginning at 9:30 a.m., in the Training Auditorium. If you cannot make it in person, I invite you to join us on NASA TV.

The theme is dedicated to our Expendable Launch Vehicle (ELV) program. We'll talk about the great accomplishments of ELV in 2003 and get everyone excited about the landing of our Mars Rovers, Spirit and Opportunity, in January.

We'll also be joined by Eugene Tatini, the JPL deputy director, who'll unveil some of the first ever pictures from SIRTf, which our team helped successfully launch in August.

We'll have a few other surprises as well, so I believe it'll be worth your time to attend or tune in..

If I don't see you at the Coffee, the all hands or around the Center during the next month, on behalf of Dr. Woodrow Whitlow, Jim Hattaway and myself, please have a very happy and safe holiday season!

Quilt stitched with memories of Columbia, crew for SSPF team



BLUE FOR JUMPSUITS and orange for flight suits: Sandra Bodiford and Tip Talone stand by the quilt Bodiford created in memory of the STS-107 mission and crew. The quilt is on display in the SSPF.

Sandra Bodiford, a quality engineer in the Safety and Mission Assurance division of the ISS/Payload Processing directorate, and Tip Talone, KSC director of ISS/Payload Processing, stand next to her quilt "Tribute," created in memory of Columbia and her seven-member crew. When Talone saw the quilt, he suggested that it be displayed in the Space Station Processing Facility for all to see.

"I'm very proud of Sandra and the heart she put into this tribute," said Talone. "I think it captures the feelings and emotions of the SSPF team, through the time and care she invested. It was therapeutic for her and also for the rest of us."

Bodiford started collecting the materials to make the quilt in March. She spent two hours a night and eight hours on weekends putting it together, and completed the colorful quilt in mid-September. The colors of the quilt were chosen as a salute to the astronauts. "Blue for their ground jumpsuits and orange for their flight suits," said Bodiford.

The quilt contains patches from each of Columbia's flights and a commemorative first flight anniversary patch. The STS-107 section is framed by shirt designs from four missions that she supported.

Gravity Probe B launch delayed to next year

After a review of test data, a decision has been made to reschedule the launch of Gravity Probe B (GP-B). The launch had been scheduled for Dec. 6 from Vandenberg Air Force Base in California.

Data obtained during spacecraft prelaunch testing shows electronic noise on an output channel associated with the No. 1 experiment gyro. This could compromise the quality of data received from it. The problem has been isolated to a component in the spacecraft's experiment control unit (ECU). While there is a second available output channel for this gyro, a postponement of the launch will allow time for a repair.

This precaution will restore full redundancy to the experiment and provide the greatest chance for success over the planned 16-month life of the mission.

At Space Launch Complex 2 in California, the rocket has successfully completed the scheduled prelaunch preparations up to this time, and there are no issues or concerns with the Delta II. The current plans are for it to remain at the pad enclosed within the gantry-like mobile service tower until the spacecraft arrives. Managers are currently assessing the launch date.



THE GRAVITY PROBE B will launch four gyroscopes into orbit to test predictions of Albert Einstein's theory of relativity.

LAB ...

(Continued from Page 1)

opportunities," said KSC Director Jim Kennedy. "It provides a meeting place for our partners in research to work together. We anticipate researchers from around the world performing investigations in the SLS Lab."

The facility, completed in August, represents a partnership between NASA and the state of Florida. The state, through Florida Space Authority, built the research laboratory. The facility is part of a \$30 million project that also includes Space Commerce Way, the new public roadway providing 24-hour access to International Space Research Park.

KSC, in partnership with Florida Space Authority, is also developing the International Space Research Park. The SLS Lab provides space for NASA's Life Sciences Services contractor Dynamac Corp., Bionetics, and researchers from the University of Florida.

NASA's Office of Biological and Physical Research will use the facility for processing life sciences experiments that will be conducted on the International Space Station. The SLS Lab is the magnet facility for the Research Park.

Space Commerce Way also connects NASA Causeway and Kennedy Parkway.



OFFICIALS WHO HELPED DEDICATE the Space Life Sciences Lab include (from left) Capt. Winston Scott, executive director of Florida Space Authority; Dr. Robert J. Ferl, director of Space Agriculture Biotechnology Research and Education (SABRE), University of Florida; Charlie Quincy, chief of the Biological Sciences Office, Kennedy Space Center; Jose Perez-Morales, NASA Project Manager for the Space Life Sciences Lab; Jim Kennedy, director of Kennedy Space Center; The Honorable Toni Jennings, lieutenant governor of Florida; Frank T. Brogan, president of Florida Atlantic University; and Dr. Samuel Durrance, executive director of Florida Space Research Institute.



THE DEDICATION OF the Space Life Sciences Lab was attended by a standing-room-only crowd. The Lab is NASA's gateway to space with operations and research capability for the International Space Station as well as research and commercialization opportunities.

Return-to-flight crew can't wait to

The STS-114 crew, augmented by three new members, is in place for the Space Shuttle's Return to Flight mission. The group has been training at KSC over the past weeks.

Three mission specialists have been added to the four astronauts already in training for the STS-114 mission planned for launch no earlier than September 2004. The new crew members, Andrew Thomas (Ph.D.), Wendy Lawrence (Capt., USN) and Charles Camarda (Ph.D.) join mission commander Eileen Collins (Col., USAF), pilot James Kelly (Lt. Col., USAF), and mission specialists Stephen Robinson (Ph.D) and Soichi Noguchi, of the Japan Aerospace Exploration Agency, who were named to this flight in 2001.

"STS-114 is going to be a complex developmental test flight, and this crew has the right set of skills and experience to help get the Space Shuttles safely flying again," said NASA's Associate Administrator for Space Flight William Readdy. "STS-114 was always slated to have a crew of seven.

"But now, instead of three crew rotating on-and-off the International Space Station, all crew members will be dedicated to the STS-114 mission objectives," Readdy said.

The major mission objectives of the STS-114 flight have shifted from International Space Station logistics and crew rotation to testing and evaluating new procedures for flight safety. This includes Shuttle inspection and repair techniques. It also includes a smaller set of Space Station tasks from what was scheduled before the Shuttle Columbia accident in February.

Collins served as pilot on STS-63 in 1995 and STS-84 in 1997. She flew as commander in 1999 on STS-93. Kelly piloted his first mission aboard STS-102 in 2001. Robinson was on STS-85 in 1997 and STS-95 in 1998. He served as a backup crew member for Expedition 4.

Thomas, a long-duration Russian Space Station Mir veteran, also served aboard STS-77 in 1996, STS-89 and 91 to and from the Mir in 1998, and STS-102 in 2001. Lawrence, another space veteran, brings experience from STS-67 in 1995, STS-86 in 1997, and STS-91 in 1998.

Noguchi and Camarda, both selected as astronauts in 1996, will make their first flight to space on STS-114.



CREW MEMBERS (above) of mission STS-114 look at the reinforced carbon-carbon panel on the Orbiter Front Panel (OPF). Top left, standing inside the OPF are (from left) astronaut Stephen Robinson, Mission Specialist Charles Camarda and Commander Eileen Collins. Bottom right, standing inside the OPF are (from left) astronaut Stephen Robinson, Mission Specialist Charles Camarda and Commander Eileen Collins.



get the show on the road



panels on the wing of Atlantis in the Orbiter Processing Facility. From left are Mission Specialist Charles Camarda, STS-114 Mission Commander Eileen Collins signs autographs for workers and Mission Specialists Charles Camarda, Wendy Lawrence and Andy Thomas.



STS-114 MISSION SPECIALIST Stephen Robinson looks closely at the tiles underneath the orbiter Atlantis.

Columbia lives on in study

Some of the first pieces of Columbia debris to be loaned for testing and research were shipped from Kennedy Space Center to The Boeing Company, Huntington Beach, Calif.

One each of the liquid oxygen and liquid hydrogen Power Reactant Storage and Distribution (PRSD) tanks were prepared for shipment from the Vehicle Assembly Building, where Columbia's debris is stored.

At the Boeing facility, the tanks, which are some of the oldest tanks in the fleet, will be inspected and evaluated in an effort to increase the knowledge of aging tank pressure vessel welds and materials.

According to Lloyd Mustin, Boeing project manager for cryogenics and fuel cells, the results could assist in a 'Tank Life Extension Program' to certify existing PRSD tanks for up to 40 years of operating life.

"Having these tanks is a unique opportunity to gain valuable insight into aging of materials," he said.

The PRSD tanks were originally built by Beech Aircraft.

The 250-pound tanks store liquid oxygen and liquid hydrogen for the orbiter's fuel cells in order to generate electric power for on-orbit use and water for the astronauts.

According to Shuttle Launch Director Mike Leinbach, "The idea of studying the debris came to us in the debris hangar soon after the accident. It was clear to the team that we shouldn't bury the debris as we did with Challenger.

"I hope the technical community will learn as much as possible from the debris and put that knowledge to use to improve spacecraft and flight crew system designs in the future."

Columbia Preservation Team Lead Scott Thurston said, "The use of these tanks are exactly what the team hoped would happen. This signifies the start of a new mission for Columbia, to further science and technology in future spaceflight and make the current fleet safer."

Native Americans honor Shuttle astronaut

Not even overcast weather could dampen the spirits of the group that gathered for the Native American Heritage Month Dinner and Celebration, Nov. 6, at the Cocoa Village Civic Center.

James Hattaway, KSC associate director, kicked off the event, hosted by United Space Alliance's chapter of the National Management Association and the Kennedy Space Center Native American Intertribal Council (NAIC). The theme for the event was "Remember the Journey, Strengthen the Circle," an honoring for Native American astronaut John B. Herrington.

An audience of more than 250 waited patiently for the guest of honor who was delayed by weather in Mississippi.

Herrington, the first tribally registered Native American astronaut to launch into space, flew aboard Endeavour on mission STS-113 in November 2002.

The Patrick AFB Honor Guard opened the program with presentation of the colors. Chickasaw native Joann Ellis presented the invocation in her native tongue. Southern Sun, a Native American drum troupe from North Carolina, made the delay pleasurable



by playing traditional drum songs.

The Chickasaw Nation dance troupe presented Herrington with a stomp dance belt made by dancer Wisey Narcomey. Entertainment included Arvel Bird, an award-winning violinist, and Jim Young, a Native American singer and storyteller.

The next day, Herrington helped celebrate the month at the Patrick Air Force Base NCO Club, where Col. Everett Thomas of the 45th Space Wing presented the astronaut with a framed memento.

ASTRONAUT JOHN HERRINGTON (center, wearing hat), who flew aboard Endeavour on mission STS-113, participates in the Native American Heritage Month celebration.

BELOW, JOHN Herrington signs autographs at Patrick Air Force Base.



Dal Santo shifts priorities preparing for program

NASA not only launches space vehicles, but careers as well. The Agency's Project Management Development Process/Accelerated Leadership Option (PMDP/ALO) program accelerates project leaders through the unique combination of a Massachusetts Institute of Technology (MIT) System Design and Management (SDM) master's degree and developmental assignment.

After an extensive application process, KSC's Rita M. Dal Santo is NASA's choice candidate for the series. Selections are made every year. KSC's Dawn Schaible and Keith Britton are previous participants now completing their developmental portion.

"I just returned from SDM orientation and am excited and nervous and thrilled," said Dal Santo. "The next two years are going to be hectic between family, work and school. The current SDM participants emphasized repeatedly at orientation that you need to have everything in order before the program starts because the pace never lets up. But, at the same time, I didn't hear any regrets."

She will take part in the program for three years total – two years for the SDM degree and one year on a developmental assignment. During the latter portion, she will work with a non-KSC team, adding diversity to her program.

"During the 24-month distance learning program, I will spend

(See RITA, Page 7)



KSC'S RITA DAL SANTO will take part in a two-year system design and management program at the Massachusetts Institute of Technology.

Safety and the Langley Research Center

This is an ongoing series of stories from NASA centers on the One NASA concept.

The investigation of the Columbia tragedy revealed the need for NASA to improve its ability to verify engineering and safety standards, share technical information and talent, and independently assess the ability to achieve mission success.

To this end, Administrator Sean O'Keefe announced the establishment of the NASA Engineering and Safety Center (NESC). As chartered, the NESC will provide independent technical expertise to evaluate problems and supplement safety and engineering activities for Agency programs and projects.

That's a big order. It's also a stimulating One NASA opportunity.

O'Keefe has tasked Langley Research Center Director Roy D. Bridges Jr. with the development and start-up of the NESC. Many current Kennedy Space Center employees know that this Center's loss is Langley's huge gain.

"Roy's experience as an aviator and shuttle pilot and his intimate knowledge of the intricate Shuttle system and other



LANGLEY RESEARCH CENTER DIRECTOR Roy D. Bridges Jr. leads the start-up of the new NASA Engineering and Safety Center.

advanced aerospace systems make him the right person to lead this critical initiative," said O'Keefe.

The NESC will take policy direction from Bryan O'Connor, associate administrator for the

Office of Safety and Mission Assurance.

What The NESC Is And Is Not

The NESC will provide centralized management of independent engineering assessment. Its experts will use state-

of-the-art tools and methods to perform truly independent assessments and trend analysis. The center does not relieve program managers from their responsibility for safety.

Instead, NESC initiatives will complement the engineering and safety efforts of programs, and its credibility and independent chain of command will assure consideration of all points of view on complex technical issues.

The NESC will be based at the Langley Research Center, Hampton, Va., and will have a management office consisting of approximately 30-40 full-time employees. Another 30-50 senior engineering and safety experts will be located at the centers but assigned full-time to the NESC. This workforce will be supplemented through partnerships with external organizations.

Finally, "ready-experts" at each field center will be a vital part of the team. From across the agency, 150-200 experts in a variety of technical specialties will review and critique flight rationale, mission requirements, testing and more. Its broader objectives include strengthening and expanding the Agency's safety, mission assurance and engineering disciplines.

It's hard to believe it's only been five years

The International Space Station (ISS), the largest international space research project in history, celebrated its fifth year in space on Nov. 20. The first element, the Russian Zarya control module,

was launched from the Baikonur Cosmodrome in Kazakhstan in 1998.

Two weeks later, the Space Shuttle Endeavour delivered the U.S. connecting module called Unity. The Station will eventually triple its scientific capacity with components being processed at the Space Station Processing Facility at KSC.

There have been 38 launches to the ISS.



THE INTERNATIONAL SPACE STATION in June 2002.

RITA . . .

(Continued from Page 6)

January 2004 and both fall semesters at MIT. The rest of the time I will work at KSC and take classes via videoconferencing," Dal Santo explained. "I am also required to travel to MIT each semester for a week-long topic session. After I complete the SDM program, I will relocate for my one-year developmental assignment."

MIT's SDM program educates future technical leaders in architecting, engineering and designing complex products and

systems. It also provides essential leadership and management skills.

"The Systems Design and Management program is not a traditional engineering management degree, but instead provides a unique systems perspective of technical organizations," she said. "This holistic approach is exactly what I was searching for and I can't wait to get started."

Further PMDP/ALO details can be found at: http://appl.nasa.gov/businessunits/career/pmdp_alo/index.html.

NASA-KSC engineer receives R&D 100 award for new insulation technology

James Fesmire, NASA lead engineer of the Cryogenics Testbed Facility at Kennedy Space Center, received the R&D (formerly Research & Development) 100 Award for his work on a new product, "Flexible Aerogel Superinsulation," a composite insulation blanket. R&D named Fesmire an innovator and the product "one of the most technologically significant of the year."

Fesmire received the R&D 100 Award during the 41st annual awards ceremony last month in Chicago, Ill., for his pioneering idea in thermal insulation. KSC Deputy Director Dr. Woodrow Whitlow attended the event as NASA-KSC and Aspen Aerogels, Inc. of Marlborough, Mass., jointly received the award.

R&D recognizes the efforts of the best scientists and engineers in industry, government, and academic research laboratories.

"It is truly an exceptional achievement for the Center, and for James' work to be chosen as one of the top innovations of the year. With so many outstanding individuals around the world making breakthroughs each year, most researchers never earn this recognition," said Whitlow.

Fesmire, a KSC employee for over 20 years, started research in advanced insulation technology in 1992 when he first learned about monolithic solid aerogels — commonly referred to as "frozen smoke." His investigation into the technology led him to believe that a durable and flexible composite aerogel material could be designed while retaining the excellent thermal insulating properties similar to the solid type.

After writing a Small Business Innovation Research (SBIR) program solicitation in 1992,

which was awarded to Aspen Systems, Inc. in 1993, Fesmire worked with the company's principal investigator Dr. Jae Ryu to make the first prototype blanket materials.

Led by company president Dr. Kang Lee, Aspen Systems has since developed breakthrough advances in manufacturing technology for aerogel production.

The new technology is the result of more than 10 years of research and development work, according to Fesmire. "And this thermal insulation product is just the beginning," he said. "This superinsulation is a major breakthrough for energy efficiency standards in industry and gives dramatic new possibilities for thermal protection systems on space launch vehicles.

"It is an outstanding candidate material for the next generation of launch vehicles and launch



The R&D AWARD given to James Fesmire (above) is for one of the most technologically significant products of the year.

site equipment," Fesmire continued. "As a blanket material, it is one of the world's best thermal insulators."

The blanket material is being investigated for advanced space suits, crew cabin protection, the Space Shuttle, and a number of other NASA applications.

More information on Flexible Aerogel Superinsulation is online at <http://www.aerogel.com>. For other KSC technology successes, visit: <http://technology.ksc.nasa.gov/>.

NASA recognizes business partners – KSC nominee from FPL wins award

NASA Headquarters nominated Ed Anderson from Florida Power & Light Company (FPL) for the Louis R. Harris Jr. award, which recognizes individuals who build strong partnerships between the federal government and the utility industry. The FPL business development manager's productive relationship with KSC won him the recognition, which he

received on Oct. 28 at a ceremony in Washington, D.C.

"I had the opportunity to work with Lou, and to be mentioned in the same framework is truly an honor," said Anderson.

"However, as the award description states, it is about a partnership. Our success at KSC is due, not in whole to my efforts, but equally to the sincere interests and dedication of the

staff at KSC. I feel honored to receive this award and privileged to be a part of the team of energy professionals at KSC."

The FPL partnership, along with other KSC-sponsored programs, reduced the Center's annual energy consumption by more than 20 percent. Through Anderson's efforts, KSC and FPL established a service agreement and completed two significant

energy projects. The first resulted in a \$6.8 million project to upgrade an emergency power plant serving Launch Complex 39, reducing KSC's electricity costs by \$770,000 annually.

The second landmark prompted a \$3.1 million energy efficiency project of lighting system upgrades, HVAC improvements and other conservation and management measures for key facilities.

KSC Holiday Celebration

Center Director James Kennedy
Deputy Director Dr. Woodrow Whitlow and
Associate Director James Hattaway
cordially invite all
KSC civil service employees to the
KSC Holiday Celebration



Location: KARS I
Date: December 16
Time: 11:30 a.m. - 3 p.m.



John F. Kennedy Space Center

Spaceport News

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